



Letter to the Editor

Mechanical CPR in refractory cardiac arrest may be practical, but injuries should be monitored: A concise meta-analysis


To the Editor,

With great interest, we read the article on mechanical chest compressions for refractory cardiac arrest in the cardiac catheterization laboratory [1]. The authors nicely point out the feasibility of this strategy to bridge patients towards percutaneous circulatory support (including extracorporeal cardiopulmonary resuscitation (ECPR)) and return of spontaneous circulation. The article adds to current knowledge why mechanical CPR devices (e.g. LUCAS and AutoPulse), in spite of lack of benefit in trials, might be helpful in ensuring good-quality prolonged CPR. Several ongoing randomized trials protocolled routine mechanical CPR during immediate transport to an ECPR capable emergency department.

Although the authors report complication rates in patients receiving ECPR, safety outcomes for the remaining patients who received mechanical compressions are not reported. Of note, there are many reports on adverse events (AEs) associated with CPR, and the rate following use of a mechanical CPR device might even be higher. Three recent randomized controlled trials that included 11,291 patients report on (serious) AEs [2–4]. Unfortunately, the focus in data collection was generally more on efficacy than on

safety, and safety issues were not systematically and uniformly collected. Whereas two studies only reported (serious) AEs(2,4), CIRC provided more detailed information, including a distinction between AEs that are usual in the setting of CPR and unexpected events [3]. The pooled estimate of the available randomized data does not indicate a difference in (serious) AEs between patients receiving mechanical or manual CPR (relative risk (95% confidence interval) = 2.2 (0.6–7.7) $p = 0.22$; estimated by random effects model, Fig. 1). However, the absolute number of reported AEs was low in LINC and PARAMEDIC [2,4], while the number of (severe) injuries after mechanical CPR might actually be much higher, up to >90% [3,5].

Hence, following successful ECPR with the help of a mechanical CPR device, we should be prepared for severe AEs particularly involving bleeding complications. Ongoing trials in this field should systematically report all injuries and implications for follow-up treatment.

Conflict of interest

On behalf of all authors, the corresponding author states that there is no conflict of interest.

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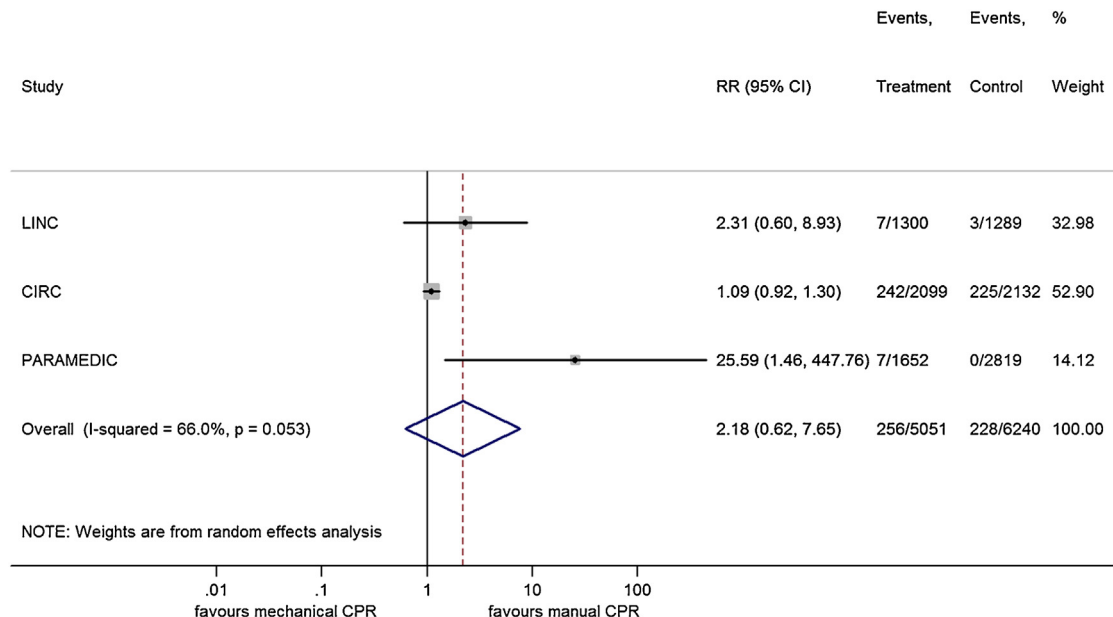


Fig. 1. Meta-analysis of reported (serious) adverse events associated with mechanical vs manual CPR in recent randomized controlled trials. Relative Risk (RRs) and 95% confidence intervals (CIs) were used as summary statistics and are reported for mechanical vs manual CPR. LINC and PARAMEDIC investigated the use of LUCAS, and CIRC studied the AutoPulse device.

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